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## *Polygala moggii* (Polygalaceae), a new species from Oman

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*Polygala moggii* (Polygalaceae), una nuova specie dall'Oman – Viene descritta una nuova specie perenne di *Polygala* scoperta in una area costiera presso Hasik (Dhofar orientale). *Polygala moggii*, oltre che dalle dimensioni contenute e dai piccoli fiori violacei, è caratterizzata da capsule glabre prive di ali e da sepali petaloidi verdi senza nervature evidenti. Per le caratteristiche dei sepali questa specie può essere accostata ad alcune poligale nane della Somalia e dell'Etiopia, anch'esse aventi un areale molto limitato.

**Key words:** Oman, *Polygala moggii*, Polygalaceae, taxonomy.

*Polygala moggii* sp. nov. grow in a rocky litoral area located at the mouth of a wadi near Hasik, eastern Dhofar. It is a perennial herb characterized by a prostrate habit and small violet flowers.

This new species is evidently different from the other *Polygala* species known from Oman (Ghazanfar, 1992, 1994) for its particular morphological features. In fact, the small dimensions of the stems, leaves and flowers, the prostrate habit, the petaloid wings with no nervation, the violet colour of the corolla, and the un-winged capsules, distinctly separate this species from *P. erioptera* DC., *P. abyssinica* R. Br., *P. dhofarica* Baker, *P. tinctoria* Vahl, *P. dispar* Ghazanfar, *P. irregularis* Boiss., *P. thurmanniana* Chod. and, particularly, from *P. obtusissima* Hochst., an up to 1 m high shrub. On the basis of the un-winged capsules, the small dimensions and the similar growth environment, *P. moggii* seems to be close to *P. mascatensis* Boiss. (N Oman, C Oman, Dhofar), a variable species especially in the leaves morphology (Boissier, 1867; Ghazanfar, 1992); moreover *P. mascatensis* is different from *P. moggii* in having an

irsute-canescens indumentum, pink purple flowers, white petaloid wings with evident nervations and pubescent capsules. Also *Polygala* sp. cited by Ghazanfar (1992) from Dhofar does not correspond to *P. moggii* since it is a perennial herb up to 30 cm tall, with purple flowers and winged capsules.

For the reduced size of the vegetative parts and the flowers, and for the prostrate habit *Polygala moggii* can be related to two small perennial species of the Arabian Peninsula: *P. rupicola* Hochst. & Steud. ex A. Rich. (continental Yemen) and *P. kuriensis* A.G. Miller (Yemen: Abd al Kuri Island). However *Polygala moggii* differs from both of them by its green petaloid wings with no evident nervation (they are white with evident nervation in the Yemenite species), and for its leaves which are elliptical-oval to sub-orbicular and not linear-elliptical (*P. rupicola*) or oblong-elliptical (*P. kuriensis*).

*P. moggii* shows a higher affinity to some dwarf species recently described from Somalia (Thulin, 1990; 2001) and Ethiopia (Gilbert, 2000).

**Polygala moggii**, Raffaelli, Mosti & Tardelli, sp. nov.

**TYPUS** - *Holotypus*: "Wadi lungo la strada fra Habdin e Hasik. Alt. 18 m., 17°14.590'N, 55°15.640'E, 12.02.2006. M. Raffaelli, M. Tardelli, S. Mosti" (FT).

**DIAGNOSIS** - *Herba perennis saepe prostrata, pubescens, brevibus pilis crispis. Rami 5-13 cm longi. Folia obovato-elliptica vel suborbicularia-obcordata. Racemi terminales breves; bracteae ovatae vel suborbiculares, persistentes. Alae obovatae-oblancheolatae, falcatae ac pilosae, virides marginibus perlucidis; sepala anteriora libera; carina cristata violacea, 2.5-3 mm longa; stamina 8. Capsula exalata, obovato-oblonga ac emarginata, glabra. Caruncula triappendiculata.*

**ETYMOLOGIA** - Dedicated to Prof. Guido Moggi previous director of the Tropical Herbarium of Florence and notable scholar of the flora of Tropical East Africa, especially Somalia and Kenya, on his 80<sup>th</sup> birthday.

**DESCRIPTION** - Perennial herb from a woody rootstock; stems numerous, 5-13 cm long, richly branched especially at the distal end, appressed or slightly ascendent and weakly zigzagging, cylindrical, puberulous with minute crisped hairs and often showing leaf scars.

Leaves 3.5-6.0 x 3-5 mm, elliptic-obovate to suborbicular-obcordate, emarginate at apex or shortly mucronate, sparsely puberulous with minute crisped hairs or glabrescent, slightly succulent, with a central midrib; petiole 0.5 mm long. Larger leaves 8-10 x 6-7 mm, sometimes present along the basal part of the branches.

Racemes short, terminal, 3-5(-6)-flowered. Bracts ca. 2.5 mm long, ovate, suborbicular or obcordate, persistent. Bracteoles 1 mm long, suborbicular, persistent.

Wing sepals 2, obovate-oblancheolate, falcate, 3 mm long, without veins or obscurely veined; posterior sepal 1.5 mm long; anterior sepals 2, free, lanceolate, ca. 0.8 mm long. All sepals greenish, with hyaline whitish-yellowish margins, crisped puberulous on the outer face and internally glabrous.

Petals 3; upper 2 oblancheolate-oblong, ca. 2 mm long, pale-violet, with a darker purple spot in the proximal portion; keel 2.5-3 mm long, violet at tip, whitish at base, crested with a lacerate pale-violet appendage. Stamens 8, ca. 2 mm. long. Capsule obovate-oblong, 3 x 2 mm, glabrous, emarginate at apex, with thickened margins, unwinged. Seeds 2.5 x 0.8 mm (not completely ripe in our specimens), ellipsoid-

oblong, densely pubescent with white straight hairs 0.5-0.7 mm long; caruncle white, ca. 0.5 x 0.5 mm, with 3 basal appendages 0.7-0.8 mm long, pubescent with white sparse patent hairs between the lobes.

**FLOWERING AND FRUITING PERIOD** - February-March.

**ICONOGRAPHY** - (Fig. 1, drawn by A. Maury).

**DISTRIBUTION (FIG. 2) AND ECOLOGY** - *Polygala moggii* was collected at the mouth of a wadi that opens nearby the coastal road between Habdin and Hasik, in eastern Dhofar (Figs. 2, 3). During the collection of the specimens, about 10-15 plants in a 200 m<sup>2</sup> area were observed. The plants grow on granitic soils, among the pebbles or in the rock fissures. Together with *Polygala moggii* the following plants were collected: *Euphorbia larica* Boiss. (or *E. dhofarensis* Carter), *Fagonia schweinfurthii* (Hadidi) Hadidi, *Convolvulus uliginus* Boiss., *Indigofera coerulea* Roxb., *Gypsophila montana* Balf. f., *Lavandula macra* Baker, *Iphionia scabra* DC., *Cleome austroarabica* Chamb. & Lamond, *Cleome brachycarpa* Vahl ex DC., *Schweinfurthia pedicellata* (T. Anderson) Balfour, *Ochradenus* sp.

#### TAXONOMIC REMARKS (TABLE 1)

*Polygala moggii* shows morphological affinities with some small Somali species (*P. argentea* Thulin, *P. bariensis* Thulin, *P. hamarensis* Thulin & Raimondo, and *P. praetermissa* Thulin), especially in the morphology and colour of the petaloid wings (falcate, green-coloured with hyaline margin and no evident nervation). However, these species show an erect not prostrate habit, lateral not terminal inflorescences, and slightly larger corolla size (from 3.5 to 4.5 mm, not of 2.5-3 mm). Furthermore, with respect to *P. moggii* (see Tab. 1) *P. argentea* has pubescent capsules; *P. bariensis* has winged capsules; *P. hamarensis* is rhizomatous, often glabrous; *P. praetermissa* has pubescent capsules and linear-lanceolate leaves.

Also *P. mooneyi* Gilbert, a small prostrate perennial herb, known from a very restricted area in Ethiopia, shows affinities with *P. moggii* for the morphological features of the petaloid wings, the colour of the corolla, the tri-appendiculate caruncle of the seed (the caruncle shows three appendixes also in the above mentioned Somali species), and for the size of its vegetative structures. However, *P. mooneyi* is different



Fig. 1 - *Polygala moggii*: habit (x 1); flower, wing sepal, seed, capsule (x 20).

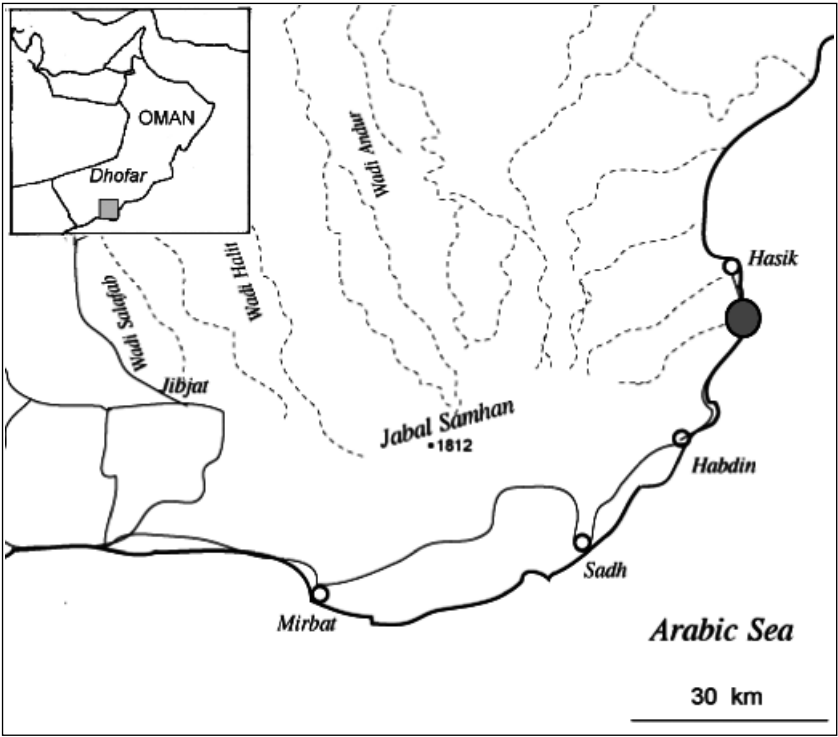


Fig. 2 - Location of *Polygala moggii* near Hasik (eastern Dhofar).



Fig. 3 - Habitat of *Polygala moggii* near Hasik (eastern Dhofar).

**Table 1** - Morphological diagnostic characters between *Polygala moggii* and the most related species.

characters	<i>Polygala moggii</i> (Oman)	<i>Polygala argentea</i> (Somalia)	<i>Polygala bariensis</i> (Somalia)	<i>Polygala hamarensis</i> (Somalia)	<i>Polygala mooneyi</i> (Ethiopia)	<i>Polygala praetermissa</i> (Somalia)
habit	perennial herb from a woody rootstock	dwarf shrublet	perennial herb from a woody rootstock	dwarf perennial	perennial herb with woody taproot	perennial herb from a woody rootstock
stem and branches	prostrate (or slightly ascendent)	erect	erect	erect	erect	erect
branch length	5-13 cm	5 cm	10 cm	8 cm	5-15 cm	5-7 cm
branch and leaf indumentum	puberulous with minute crisped hairs	silvery crisped short hairs	pubescent with minute crisped hairs	glabrous or pubescent with spreading hairs	appressed-puberulent	densely puberulous with minute crisped hairs
rhizome	no	no	no	yes (whitish)	no	no
leaf blade	elliptic-obovate to suborbicular-obcordate	obovate	narrowly elliptic to obovate	elliptic-oblong to obovate or suborbicular	elliptic to elliptic-lanceolate	linear-lanceolate
leaf size	3.5-6(-10) x 3-5(-7) mm	4-9 x 3.5-8 mm	2-7.5 x 1-3.2 mm	3.5-14 x 2-7 mm	7-13 x 2-5 mm	4-8 x 1-1.6 mm
inflorescence	racemes terminal 3-5(-6) flowered	racemes lateral, dense, up to 10-flowered	racemes lateral few-flowered	lateral racemes few-flowered	racemes leaf-opposed, very lax, 1-6 flowered	lateral racemes
inflorescence bract	ovate to suborbicular-obcordate, persistent	lanceolate, caducous	ovate, caducous	lanceolate, persistent	minute, soon caducous	lanceolate, caducous
wing sepals	obovate-ob lanceolate, falcate, crisped puberulous, greenish with hyaline margins	oblanceolate-elliptic, falcate, greenish with hyaline margins	oblanceolate falcate, greenish with hyaline margins	oblanceolate falcate, greenish with hyaline or flushed purplish margins	elliptic, slightly falcate, greenish with narrow scarious margins	oblanceolate, falcate, crisped puberulous, greenish with hyaline margins
size and colour of keel	2.5-3 mm, violet	4 mm, blue at tip	4-4.5 mm, blue at tip	4 mm ca., purple at tip	5.5 mm slightly violet, blue or bright pink with paler base	3.5 - 4 mm blue or bluish violet
colour of appendage	pale violet	white	blue	purple	blue, violet or pink	bluish violet
shape and colour of the upper petals	oblanceolate-oblong pale violet, with a violet spot in the proximal portion	oblanceolate-oblong, white with blue markings	spatulate, blue	narrowly obovate, purple	obovate, truncate, slightly violet, blue or bright pink	spatulate, blue or bluish-violet
capsule	obovate-oblong emarginate, unwinged, glabrous	elliptic-oblong, emarginate, unwinged, sparsely pubescent	obovate, emarginate narrowly winged, glabrous	obovate, emarginate, narrowly winged, glabrous or pubescent	suborbicular with narrow glabrous wings	obovate, emarginate, unwinged, puberulous
soil-habitat	on granitic soil near the sea (18 m)	on flat limestone rocks on the costal plain (at about 50 m)	bushland on limestone plateaus (750-800 m)	on costal dunes, calcareous sand over coral (10-25 m)	deep red to light brown sandy soil overlying granite (1900-2000 m)	stony places or stony limestone slopes (1500-1750 m)

from *P. moggii* for its lateral inflorescences, larger flowers and winged capsules.

Probably *Polygala moggii* and the other dwarf species described from Arabia and eastern Africa may be treat-

ed as a complex of small species with extremely local distribution whose genesis and differentiation depend on the local environmental and edaphic conditions.

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**Abstract:** *Polygala moggii* grow in a coastal area near Hasik (eastern Dhofar). This new species, apart from its small size and small violet flowers, is also characterized by glabrous unwinged capsules and greenish petaloid sepals without evident nervation. For the characteristics of the sepals, this species resembles some other dwarf species from Somalia and Ethiopia, which have also a limited distribution.